Toxic Shock Syndrome

DISEASE REPORTABLE WITHIN 24 HOURS OF DIAGNOSIS

Per N.J.A.C. 8:57, healthcare providers and administrators shall report by mail or by electronic reporting within 24 hours of diagnosis, confirmed cases of Toxic Shock Syndrome to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. A directory of local health departments in New Jersey is available at http://www.state.nj.us/health/lh/directory/lhdselectcounty.shtml.

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to 609.588.7500, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to 609.392.2020 during all other days and hours.

CDS
Communicable Disease Service

NEW JERSEY DEPARTMENT of HEALTH and SENIOR SERVICES

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1 THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Toxic shock syndrome (TSS) is an acute but rare systemic complication associated with exotoxin-producing strains of *Staphylococcus aureus.*

B. Clinical Description

TSS is a severe toxin-mediated multisystem illness characterized by the sudden onset of high fever (usually temperature > 102˚F), vomiting, profuse watery diarrhea, and myalgia, followed by hypotension (systolic blood pressure < 90 mm Hg) and, potentially, shock. During the acute phase of the illness, a sunburn-like diffuse rash is present. One to two weeks after onset, desquamation of the skin occurs, especially on the soles and palms. In addition, other organ systems may be involved resulting in vaginal oropharyngeal or conjunctivae hyperemia, renal impairment (i.e., elevated blood urea nitrogen and creatinine levels or urinary sediment with pyuria), hepatic impairment (i.e., elevated bilirubin and aminotransferase levels), thrombocytopenia, and mental status changes. Isolation of *S. aureus* from blood, cerebrospinal fluid, or throat cultures in the absence of other pathogens is diagnostic; Rocky Mountain spotted fever, leptospirosis, and measles may resemble TSS and should be ruled out. TSS can be fatal; 5% of all cases are fatal.

C. Reservoir

Humans are the primary reservoir for *S. aureus.*

D. Transmission

TSS, in and of itself, is not transmitted person to person, but the causative agent, *S. aureus*, can be transmitted through contact with draining or purulent lesions or contaminated respiratory secretions or through direct contact with persons who are carriers of the bacteria.

E. Incubation Period

The incubation period for *S. aureus* infection is variable; it is usually four to ten days.

F. Period of Communicability or Infectious Period

TSS is not communicable person to person.

G. Epidemiology

In 1980, TSS became widely recognized when an association between TSS and the use of vaginal tampons was established. Since that time, TSS associated with menstruation has decreased to 55% of reported cases. Cases of TSS are now associated with contraceptive devices such as the diaphragm and vaginal sponge and infections following childbirth, abortions, or other gynecologic procedures. There have been growing numbers of cases observed in men and women with *S. aureus* isolated from focal lesions of skin, bone, respiratory tract, surgical site infections, and cutaneous or subcutaneous lesions. The source of infection is unknown in up to one third of cases. The Centers for Disease Control and Prevention (CDC) estimates that 30% to 40% of the general population is colonized with *S. aureus* on the skin or mucous membranes including the nasal passages, anal area, groin, and/or vagina. Persons considered at risk for TSS include (a) menstruating women using tampons or other inserted vaginal devices (such as diaphragms or contraceptive sponges) and (b) persons with staphylococcal wound infections.

2 CASE DEFINITION

A. New Jersey Department of Health and Senior Services (NJDHSS) Case Definition

1. Clinical Case Definition

An illness with the following clinical manifestations:

- **Fever:** temperature greater than or equal to 102.0°F (38.9°C)
- **Rash:** diffuse macular erythroderma
- **Desquamation:** one to two weeks after onset of illness, particularly on the palms and soles
- **Hypotension:** systolic blood pressure less than or equal to 90 mm Hg for adults or less than fifth percentile by age for children less than 16 years of age; orthostatic drop in diastolic blood pressure greater than or equal to 15 mm Hg from lying to sitting, orthostatic syncope, or orthostatic dizziness

Multisystem involvement (three or more of the following):

- **Gastrointestinal:** vomiting or diarrhea at onset of illness

- **Muscular:** severe myalgia or creatine phosphokinase level at least twice the upper limit of normal
- **Mucous membrane**: vaginal, oropharyngeal, or conjunctival hyperemia
- **Renal**: blood urea nitrogen or creatinine at least twice the upper limit of normal for laboratory or urinary sediment with pyuria (greater than or equal to five leukocytes per high-power field) in the absence of urinary tract infection
- **Hepatic**: total bilirubin, alanine aminotransferase enzyme, or aspartate aminotransferase enzyme levels at least twice the upper limit of normal for laboratory
- **Hematologic**: platelets less than 100,000 per cubic mm
- **Central nervous system**: disorientation or alterations in consciousness without focal neurological signs when fever and hypotension are absent

2. Laboratory Criteria

Negative results on the following tests, if obtained:

- Blood, throat, or cerebrospinal fluid cultures (blood culture may be positive for *S. aureus*)
- Rise in titer to Rocky Mountain spotted fever, leptospirosis, or measles

3. Case Classification

CONFIRMED
A case that meets the laboratory criteria and in which all five of the clinical findings described above are present, including desquamation, unless the patient dies before desquamation occurs.

PROBABLE
A case that meets the laboratory criteria and in which four of the five clinical findings described above are present.

POSSIBLE

Not used.

B. Differences from CDC Case Definition

None.

3 DISEASE REPORTING AND CASE INVESTIGATION

A. Laboratory and Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.6) stipulates that healthcare providers and laboratories report (by telephone, by confidential fax, or over the Internet using the

Communicable Disease Reporting and Surveillance System [CDRSS]) all cases of TSS to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. The report shall contain, at a minimum, the reporting laboratory's name, address, and telephone number; the age, date of birth, gender, race, ethnicity, home address, and telephone number of the person tested; the date of testing; the test results; and the healthcare provider's name and address.

B. Local Board of Health Reporting and Follow-Up Responsibilities

NJAC 8:57-1.8 stipulates that the health officer report the occurrence of a confirmed case of toxic shock syndrome within 24 hours of diagnosis.

1. Case Investigation

- If a provider report is received by a local health department (LHD), the LHD should enter the report into CDRSS as instructed below.
- If the provider report is received by NJDHSS and includes the patient's address, NJDHSS will enter the report into CDRSS.
- If the provider report received by NJDHSS does not include the patient's address, NJDHSS will call the provider for the information. Once it is received, NJDHSS will enter the report into CDRSS as PENDING.
- It is the local health department's responsibility to obtain the information required to appropriate classify the case . Most information should be available from the patient's healthcare provider or medical record, though interviewing the patient and/or a family member might also be useful.

C. CDRSS

The mandatory fields in CDRSS include: disease, last name, county, municipality, gender, race, ethnicity, case status, report status.

The following table can be used as a quick reference guide to determine which CDRSS fields need to be completed for accurate and complete reporting of *Staphylococcal* Toxic Shock Syndrome cases. The "CDRSS Screen" column includes the tabs which appear along the top of the CDRSS screen. The "Required Information" column provides detailed explanations of what data should be entered.

CDRSS Screen	Required Information
Patient Info	Enter the disease name ("TOXIC SHOCK SYNDROME"), patient demographic information, illness onset date, and the date the case was reported to the local health department (LHD). Trip the

CDRSS Screen	Required Information
	"STAPHYLOCOCCAL" subgroup for TSS.
Addresses	Enter any alternate address as needed. Use the Comments section in this screen to record any pertinent information about the alternate address. Entering an alternate address will allow other disease investigators access to the case if the alternate address falls within their jurisdiction.
Clinical Status	Enter any treatment that the patient received and record the names of the medical facilities and physician(s) involved in the patient's care. If the patient received care from two or more hospitals, be sure that all are entered so the case can be accessed by all infection control professionals (ICPs) covering these facilities. If the patient is alive, select "NO" in the Mortality section. If the patient died, select "YES" in the Mortality section with the date of death.
Signs/Symptoms	Check appropriate boxes for signs and symptoms, include values as required by case definition and indicate their onset date. Make every effort to get complete information by interviewing the physician, the case patient, family members, ICP, or others who might have knowledge of the patient's illness. Also, information regarding the resolution of signs and symptoms should be entered.
Risk Factors	Enter complete information about risk factors (i.e. wound infection) as they are known.
Laboratory Eval	Select "*STAPHYLOCOCCUS AUREUS* IDENTIFIED" and use the drop down to note the type of specimen or record the type of specimen in the Comments section. Specimen type, specimen collection date, test result, and, if applicable, test value should also be recorded. Additionally, include the NEGATIVE results requested in the case definition.
Contact Tracing	Information regarding contacts is not required for sporadic cases of this disease.

CDRSS Screen	Required Information
Case Comments	Enter general comments (i.e., information that is not discretely captured by a specific topic screen or drop-down menu) in the Comments section. **NOTE:** Select pieces of information entered in the Comments section CANNOT be automatically exported when generating reports. Therefore, whenever possible, record information about the case in the fields that have been designated to capture this information; information included in these fields CAN be automatically exported when generating reports.
Epidemiology	Information regarding epidemiologic investigative exposures is not required for sporadic cases of this disease.
Case Classification Report Status	Case status options are: "REPORT UNDER INVESTIGATION (RUI)," "CONFIRMED," "PROBABLE," "POSSIBLE," and "NOT A CASE." • All cases entered by laboratories (including LabCorp electronic submissions) should be assigned a case status of "REPORT UNDER INVESTIGATION (RUI)." • Cases still under investigation by the LHD should be assigned a case status of "REPORT UNDER INVESTIGATION (RUI)." • Upon completion of the investigation, the LHD should assign a case status on the basis of the case definition. "CONFIRMED," "PROBABLE" and "NOT A CASE" are the only appropriate options for classifying a case of TSS (see section 2A). Report status options are: "PENDING," "LHD OPEN," "LHD REVIEW," "LHD CLOSED," "DELETE," "REOPENED," "DHSS OPEN," "DHSS REVIEW," and "DHSS APPROVED." • Cases reported by laboratories (including LabCorp electronic submissions) should be assigned a report status of "PENDING." • Once the LHD begins investigating a case, the report status should be changed to "LHD OPEN." • The "LHD REVIEW" option can be used if the LHD has a person who reviews the case before it is closed (e.g., health officer or director of nursing). • Once the LHD investigation is complete and all the data are entered into CDRSS, the LHD should change the report status to "LHD CLOSED." • "LHD CLOSED" cases will be reviewed by DHSS and be

CDRSS Screen	Required Information
	assigned one of the DHSS-specific report status categories. If additional information is needed on a particular case, the report status will be changed to "REOPENED" and the LHD will be notified by e-mail. Cases that are "DHSS APPROVED" cannot be edited by LHD staff (see Section C below). If a case is inappropriately entered (e.g., a case of TSS was erroneously entered as a case of STSS) the case should be assigned a report status of "DELETE." A report status of "DELETE" should NOT be used if a reported case of TSS simply does not meet case definition. Rather, it should be assigned the appropriate case status, as described above.

D. Other Reporting/Investigation Issues

1. It is not always possible to obtain all the information necessary to classify a case. A minimum of three attempts (not necessarily to the same person) should be made to obtain necessary information. If information can not be obtained after these three requests, the case should be entered into CDRSS if it hasn't already been and the number of attempts, including dates and outcomes of the attempts documented in the comments section. The case status should be changed to "NOT A CASE" and the report status changed to "LHD CLOSED."

2. Every effort should be made to complete the investigation within three months of opening a case. Cases which remain open for three months or more and have no investigation or update notes will be closed by NJDHSS and marked as "Not a Case."

4 CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (NJAC 8:57-1.10)

None.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

The occurrence of two or more cases with an epidemiological association is sufficient to suspect an outbreak and to initiate an investigation. Contact the IZDP (609.588.7500) to obtain investigation assistance.

D. Preventive Measures

Advise individuals as appropriate to:

- Use the lowest absorbency tampon and change it frequently
- Follow directions for use of diaphragms or contraceptive sponges and not leave the device in place for more than 30 hours
- Discontinue tampon use immediately and call a healthcare provider if they develop a high fever, vomiting, or diarrhea during menstruation
- Complete the full course of prescribed antibiotic therapy for staphylococcal infections

References

Heymann D, ed. *Control of Communicable Diseases Manual*. 18th ed. Washington, DC: American Public Health Association; 2004.

Centers for Disease Control and Prevention. Case definitions for infectious conditions under public health surveillance. *MMWR Morb Mortal Wkly Rep*. 1997;46:RR-10.